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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

REDDY, KARUNA P

ART UNIT

PAPER NUMBER

1796

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<i>Office Action Summary</i>	Application No.	Applicant(s)	
	10/551,109	MOSSEVELD ET AL.	
	Examiner	Art Unit	
	KARUNA P. REDDY	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-38 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 20-38 is/are rejected.
- 7) ☒ Claim(s) 20-24,27 and 28 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/18/2009</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. Preliminary amendment filed 9/26/2005 is made of record. Claims 1-19 are cancelled, and claims 20-38 are added. Accordingly, Claims 20-38 are currently pending in the application.

Claim Objections

2. Claims 20-24 and 27-28 are objected to because of the following informalities:

Claim 20 (lines 8-12) recites "from 0.1 to 20.0% by weight of at least one functional comonomer unit selected from the group consisting of carboxyl-, hydroxyl-, epoxy- and NH-functional, ethylenically unsaturated comonomers, and hydroxyalkyl acrylates and hydroxyalkyl methacrylates having a C₁- to C₈-alkyl radical, and optionally, olefin comonomers(s), the data in % by weight being based on the total weight of the polymer." For clarity, applicant is advised to rephrase it as "from 0.1 to 20.0% by weight, based on total weight of the polymer, of at least one functional comonomer unit selected from the group consisting of carboxyl-, hydroxyl-, epoxy- and NH- functional ethylenically unsaturated comonomers, and hydroxyalkyl (meth)acrylates having a C₁- to C₈-alkyl radical, and optionally olefin comonomer(s)."

Claim 21 (lines 2-4) recites "wherein polymers comprising one or more comonomer units selected from the group consisting of vinyl esters of straight-chain or branched carboxylic acids having 1 to 18 carbon atoms are used." Applicant is advised to list the Markush group as follows "wherein polymers comprise one or more

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comonomer units selected from the group consisting of vinyl esters of straight-chain or branched carboxylic acids having 1 to 18 carbon atoms.”

Claim 22 (lines 2-3) recites “wherein the N-alkylol-functional comonomer units having a C₁- to C₄-alkylol radical are contained.” Applicant is advised to rephrase it as “wherein the functional comonomer units are present and comprise N-alkylol functional comonomer units having a C₁- to C₄-alkylol radical.”

Claim 23 (lines 2-6) recites “wherein one or more comonomer units derived from N-methylolacrylamide (NMA), N-methylolmethacrylamide, N-methylolallylcarbamate, C₁- to C₄-alkyl ethers of N-methylolacrylamide, N-methylolmethacrylamide and N-methylolallylcarbamate, and C₁- to C₄-alkyl esters of N-methylolacrylamide, of N-methylolmethacrylamide and of N-methylolallylcarbamate are employed.” Applicant is advised to list the Markush group as follows “wherein one or more comonomer units are selected from the group consisting of N-methylolacrylamide (NMA), N-methylolmethacrylamide, N-methylolallylcarbamate, C₁- to C₄-alkyl ethers of N-methylolacrylamide, N-methylolmethacrylamide and N-methylolallylcarbamate, and C₁- to C₄-alkyl esters of N-methylolacrylamide, N-methylolmethacrylamide and N-methylolallylcarbamate.”

Claim 27 recites (lines 2-7) “wherein one or more protective colloids from the group consisting of styrene/maleic acid and vinyl ether/maleic acid copolymers, starch and dextrans are contained as the protective colloid.” Applicant is advised to list the Markush group as follows “wherein one or more protective colloids are selected from the group consisting of styrene/maleic acid copolymer, vinyl ether/maleic acid copolymer, starch and dextrans.” while including other Markush elements recited in claim 27 in place of “.....”.

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Claim 28 recites "wherein polyvinyl alcohols having a degree of hydrolysis of from 85 to 94 mol % and a Höppler viscosity, in 4% strength aqueous solution, of from 3 to 15 mPa.s at 20°C according to DIN 53015 are contained as the protective colloid."

Applicant is advised to rephrase it as "wherein protective colloids are polyvinyl alcohols having a degree of hydrolysis of from 85 to 94 mol % and a Höppler viscosity, in 4% strength aqueous solution, of from 3 to 15 mPa.s at 20°C according to DIN 53015."

Appropriate clarification and/or correction are required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.
5. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20 (line 2) recites "optionally modified starch is combined with at least one polymer additive". It is not clear if the starch is optionally modified or if at least one polymer additive is optionally added to the modified starch. Furthermore, it is not clear if the claims are directed to a composition or an article i.e. molding. Thus, metes and bounds of this claim cannot be ascertained by one skilled in the art.

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Claim 30 recites “starch molding composition or molding prepared therefrom of claim 20, which is an adhesive.” It is not clear if starch molding composition or molding is an adhesive or whether starch molding composition or molding is added to the adhesive.

6. Claims 21-23 either recite the limitation "claim 1" or "claim 3" in line 2. There is insufficient antecedent basis for this limitation because claims 1 and 3 are cancelled.
7. Claim 22 recites the limitation "the N-alkylol-functional comonomer" in line 2. There is insufficient antecedent basis for this limitation because independent claim 20 does not include any N-alkylol functional comonomer and furthermore claim 1 on which claim 22 depends is cancelled. It appears that claim 23 should be dependent on claim 22. If so, claim 23 is subsumed by this rejection.
8. Claim 32 recites the limitation “further comprises an additional binder comprising biodegradable polyester.” in lines 1-2. There is insufficient antecedent basis for this limitation because there is no reference to a binder in claim 20 or 31 on which this claim depends directly or indirectly.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 20-21, 24-25, 27, 29, 31 and 34-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Ritter et al (US 5,439,953).

Ritter et al disclose in examples 1-4 molding made from a composition comprising polyvinyl acetate homo- or co-polymer dispersion comprising either polyvinyl alcohol or starch ether as protective colloid; potato starch and water. Extrusion temperatures in examples 1-4 fall within the claimed range of from 70°C to 150°C. It is noted that polyvinyl acetate has a T_g of 30°C and falls within the range of -30°C to +120°C recited in claim 25. The invention of Ritter et al disclose mixing thermoplasticized starch with thermoplastic polymers of synthetic origin to produce a modified polymer mixed product which ensures biodegradability of the materials and of molded articles thereof (column 2, lines 53-62) and read on the rottable molding of present claims 34-35. Conventional processing methods such as injection molding, extrusion molding, extrusion blowing and film blowing are employed (column 11, lines 7-10).

Therefore, Ritter et al anticipate the present claims.

11. Claims 20, 22-23, 26-27, 29-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Wendel et al (US 5,358,998).

Prior to setting forth the rejection, it is noted that claim 30 is interpreted as a starch molding composition which is an adhesive i.e. binder.

Wendel et al disclose aqueous polymer dispersions containing polymer obtained by free radical polymerization and sugared starch (abstract). See table 7 wherein the

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monomer composition comprises 5 wt% of N-methylol methacrylamide and other monomers such as styrene and butyl acrylate. The polymer dispersions are readily stabilized with degradable starches (column 2, lines 40-45) and read on protective colloid of claim 27 and starch of independent claim 20. Preferred class of aqueous dispersions are those whose free-radical polymerization of monomer mixture comprises from 50 to 100% by weight of esters of acrylic acid and/or methacrylic acid with alkanols having 1 to 12 carbon atoms and/or styrene or from 70 to 100% by weight of vinyl chloride and/or vinylidene chloride (column 5, lines 56-67). Sugared starches are present in amounts of from 1 to 120% by weight, based on amount of polymerized monomers (column 6, lines 12-18), preferably from 10 to 65% by weight based on polymerized monomers (column 9, lines 25-27). Suitable secondary emulsifiers are the protective colloids and emulsifiers otherwise usually employed as dispersants. Secondary surfactants are generally used in amounts of up to 5% by weight (column 6, lines 51-53). The aqueous dispersions are particularly suitable as binders and adhesives (column 8, lines 27-29) and for the production of moldings (column 11, lines 13-15).

Therefore, Wendel et al anticipate the present claims.

12. Claims 20-21, 24-27, 29-31, 33 and 36-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Hashemzadeh et al (US 2002/0135086 A1).

Prior to setting forth the rejection, it is noted that claim 30 is interpreted as a starch molding composition which is an adhesive i.e. binder.

Hashemzadeh et al disclose a binder composition containing (A) one or more copolymer units selected from the group consisting of vinyl esters of branched or

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unbranched alkyl carboxylic acids of 1 to 18 carbon atoms, acrylic or methacrylic esters of branched or unbranched alcohols of 1 to 15 carbon atoms, dienes, olefins, vinyl aromatics and vinyl halides, and further containing 4 to 60% by weight, based on the total weight of the copolymer, of one or more comonomer units containing polar groups, and (B) one or more fillers having a polar surface capable of interaction with the polar groups of copolymer (A) and formed into articles (abstract). Filler is present in amounts of 4 to 25% by weight, based on the total weight of polymer and filler (paragraph 0011). See claims 8-11 wherein starch (reads on protective colloid of claims 26-27 and starch of independent claim 20) is listed as filler in the composition used to form the article. The addition polymers are preferably prepared by emulsion polymerization (paragraph 0024). The binder composition is prepared by mixing the aqueous dispersion of the addition polymer with the filler. The filler is often applied in the form of a paste, in a blend with surfactants i.e. emulsifiers. Polymer powder and filler powder to be mixed can be extruded from an extruder (paragraph 0027) and reads on molding process.

Useful polar groups are for example carboxyl, hydroxyl, phosphonate, sulfonate or NH groups (paragraph 0015). Useful hydroxyl-functional comonomers include hydroxyalkyl (meth)acrylates having a C₁-C₈ alkyl radical (paragraph 0016). Preference is given to vinyl acetate-ethylene copolymers; vinyl ester-ethylene-vinyl chloride copolymers; and vinyl ester-acrylic ester copolymers; where the vinyl ester component is preferably vinyl acetate (paragraph 0019). The comonomers and their weight fractions are chosen so that in general T_g is in the range from -30°C to 95°C in the case of polymers used in aqueous dispersion (paragraph 0022). The articles are formed at temperatures of from 20°C to 220°C. When elevated temperatures are used, it is preferably in the range of from 90°C to 220°C (paragraph 0029). See example 1,

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wherein water is added prior to molding (paragraph 0036). The binder composition is useful for forming articles from particulate materials such as natural materials including wood shavings, wood and cellulose (paragraph 0028).

Therefore, Hashemzadeh et al anticipate the present claims.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness

under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ritter et al (US 5,439,953) in view of Famili et al (5,362,778).

The discussion with respect to Ritter et al in paragraph 10 above is incorporated here by reference.

Ritter et al is silent with respect to the properties of polyvinyl alcohol.

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However, Famili et al teach extrudable PVOH compositions comprising modified starch. The product has improved modulus, reduced elongation and high relative humidity (abstract). Suitable PVOH is 75-99 mol% hydrolyzed and has solution viscosities of 3 to 55 cps at 20°C as a 4% aqueous solution (column 3, lines 4-10). Therefore, it would have been obvious to one skilled in the art at the time invention was made to use polyvinyl alcohol, having the recited degree of hydrolysis of 85 to 94 mol%, and a viscosity of 3 to 15 mPa.s, as protective colloid, in the aqueous polymer dispersion of Ritter et al, for above mentioned advantages.

16. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hashemzadeh et al (US 2002/0135086 A1) in view of Miyamoto et al (JP 2002-020601).

The discussion with respect to Hashemzadeh et al in paragraph 12 above is incorporated here by reference. Furthermore, recycling involves the addition of further binders (paragraph 0033).

Hashemzadeh et al is silent with respect to biodegradable polyester.

However, Miyamoto et al teach biodegradable polyester resin composition that can degrade at a desired rate without lowering strengths of resin and is used as an adhesive (abstract). Therefore, it would have been obvious to one skilled in the art at the time invention was made to add biodegradable polyester resin to the molding composition / molding of Hashemzadeh et al because Hashemzadeh et al contemplate adding further binders and Miyamoto et al teach that biodegradable polyester resin can degrade at a desirable rate without lowering strength and one of ordinary skill in the art would expect such an addition to provide the benefit of degradation of binder at a desirable rate.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARUNA P. REDDY whose telephone number is (571)272-6566. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. P. R./
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796